Option one: Web Application

Description

A web application is a computer tool or application that is accessible either through a local network or internet browser. Using a browser, you can gain access to all the solutions and all functionalities.

Benefits

- Users do not have to install any specific software since you can access the application through a browser.

- The application is multi-device and cross-platform.

- The power does not come from the device is accessing it. The device does not have to be a supercomputer for the application to be powerful. The application is hosted on the cloud, this allows it to be accessible to any device that has internet access.

- It is very visually intuitive, easy to update, and adaptable.

Costs

Website design prices in South Africa varies from R1,000 to R30,000 and up, depending on the experience and skill that the designers have, as well as the content management systems and programming language/s that they use. But for this project there will be no cost for the development of the web application as this is a university project, keeping in mind that there is a need for hosting a database, the website an also a storage account.

Feasibility

Time is an important consideration in web application development, it mainly involves the time that the project will take to finish and is ensured that it serves the purpose for which it is being developed. This project has limited time, but the programmers have experience in building the web application, so this is not as big of a factor. Some of the students work as full stack developers and have skills to complete the web application with ease.

Resources is the other important considerations in an application development, considering that there is the right number of resources available so that the developers do not have anything to stop them from completing the project. If the database needs to be scaled up, then it needs to happen without struggling.

Risks

SQL INJECTION

This is a code injection technique that can destroy the database that we use and is among the most common web application hacking techniques. This can occur when we ask a user for input, like their username, and instead of them giving their name, the user gives an SQL statement that can unknowingly run on the database.

SENSITIVE DATA EXPOSURE

This relates to the exposure to how sensitive data is stored and transmitted. This occurs when:

- Sensitive data is transmitted in clear text from browsers to servers and vice versa (external traffic).

- Sensitive data is transmitted in clear text between servers (internal traffic).

- Sensitive data is stored in clear text.

- A weak or old cryptographic algorithm is used.

BROKEN AUTHENTICATION AND SESSION MANAGEMENT

Authentication and session management in web applications are usually not implemented in the right manner, allowing people to compromise session tokens, keys, passwords, or exploit other implementation flaws to mimic different users' identities.

CROSS-SITE SCRIPTING

This risk is almost the same as SQL Injection, in the way that the attackers can inject code that is not ours, but instead of getting data from our database, the scripting is done on the browser itself, making it redirect users to other websites that is not ours and allowing them to steal the users' data.

BROKEN ACCESS CONTROL

This risk is in web applications that do not verify their permissions and roles properly. With that said, a user will be able to access the web application resource by just using a specific URL.

Most of the web applications manage their permissions and roles only in the frontend, but not in the backend and calls are not validated, so a user has access sensitive data by accessing data directly in the backend.

Issues

USER INTERFACE AND USER EXPERIENCE

If our web applications confuse or frustrate the users, then it is hard to maintain our customer's loyalty for the web application.

Navigation is another part often forgotten by developers. Intuitive navigation makes for a better experience for the website users. Intuitive navigation leads the user to information that they are looking without the need to spend a lot of time learning the application.

SCALABILITY

Scalability is neither about making good use of bandwidth and computing power nor is it about performance. It is about balancing the load between the servers. When the load is increasing additional servers are added to balance it out.

PERFORMANCE

In general, it is important for web applications speed to be fast and makes for a successful web application. Whereas a Slow web application is failure. As a result, users will abscond our website thus, damaging our revenue and reputation. Unmanaged growth of data, un-Optimized Databases, traffic spikes and poor load distribution are to be considered when developing the web application and should be one of the highest priorities.

Assumption

This will be one of the easier options to consider. All the members in the team have experience in the field, there is no external software needed to complete the project, and there will be no cost for the developers' skills as there is no need for external courses. However, there is a need for hosting the database and website that will increase the cost of the development.